

Sustainability: The Next 21st Century Workplace Skill

"WE MUST CONSIDER OUR PLANET TO BE ON LOAN FROM OUR CHILDREN, RATHER THAN BEING A GIFT FROM OUR ANCESTORS...IF THE LONG-TERM VIABILITY OF HUMANITY IS TO BE ENSURED, WE HAVE NO OTHER CHOICE."



PHOTO BY JOSHUA ROSEN

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THE MESSAGE IS CLEAR. AS A COUNTRY AND GLOBAL COMMUNITY, we are heading into a deep abyss unless we change the way we live and act in terms of the three pillars of sustainability—environmental, economic and social. For 22 years, the term “sustainability” has captured the hearts and minds of enthusiasts around the world. Now, in June 2009, Virginia Beach City Public Schools (VBCPS), the nation’s 48th largest school system, has selected “sustainability” as one of its 21st century skills—one that all 68,751 students must learn. This selection sets a new direction and purpose for skill acquisition as part of the VBCPS’ new strategic plan, “Compass to 2015.”

Why Sustainability?

The most commonly referenced definition of sustainability is from the 1987 United Nations publication, *Our Common Future*, known as the “Brundtland Report.” The report stipulates that “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

If VBCPS is to transition to sustainability, we must not only meet our current needs, but we must also nurture and restore resources for future generations. The three pillars of sustainability need to be engaged using a systems approach in tandem with our city partners. This is essential if we are to maintain a high quality of life for current and future generations. Sustainability is a multidimensional concept for municipalities as well as school systems. They must build facilities that

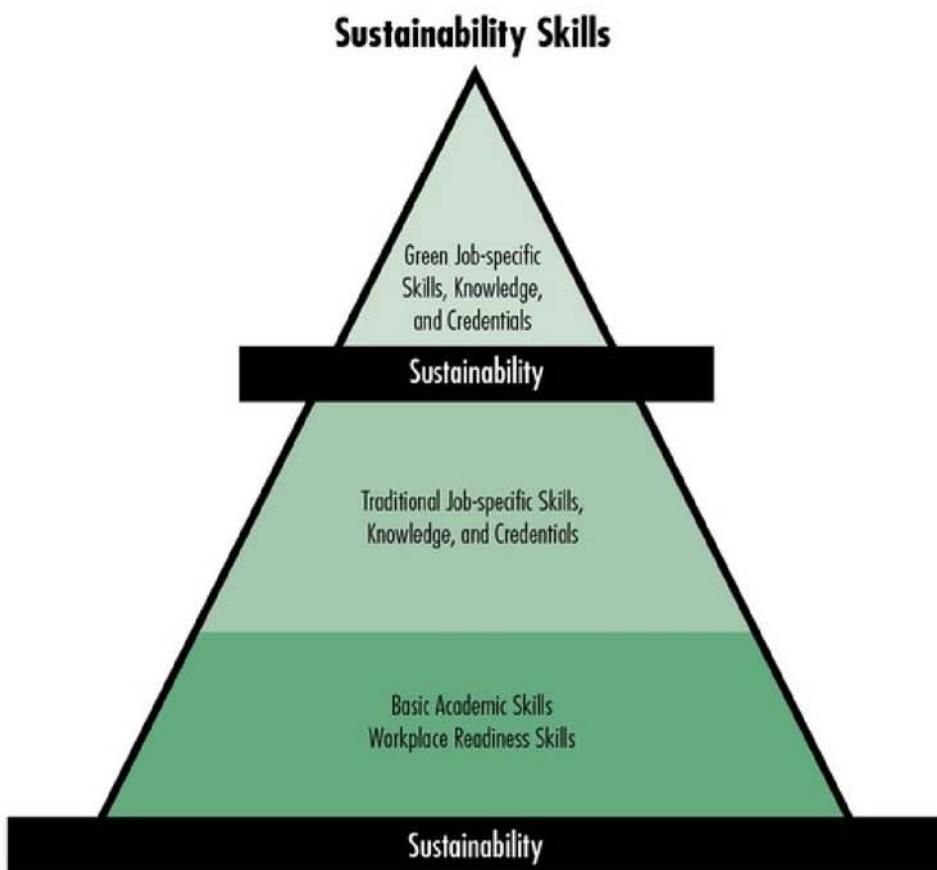
meet Leadership in Energy and Environmental Design (LEED) criteria, invest in staff sustainability training, and make a commitment to protecting the local ecosystems—all within the three pillars framework.

Sustainability is not an amorphous term that is hard to understand, but rather a concept that represents a way for us all to live out our future. The green collar economy has become a new workforce destination just as the declaration of “high-tech and high-tech skills” was the career and technical education (CTE) battle cry only a few decades ago. Renowned eco-author Tom Friedman makes a strong pitch for teaching engineering students the LEED concept in his book *Hot Flat and Crowded*. Virginia Beach Technical and Career Education (TCE) is taking that idea one step further by teaching LEED concepts to junior and senior computer-aided design (CAD) students at 13 sites.

Sustainability and Careers

Many jobs already have green sustainability aspects such as those identified in the 2009 Heldrich Center for Workforce Development (Rutgers University) Green Jobs brief:

- construction workers
- cost estimators
- financial analysts
- computer technicians
- accountants
- manufacturing workers
- truck drivers
- salespersons
- scientists
- engineers



Source: John J. Heldrich Center for Workforce Development, 2009

Figure 1: Skills Sought by Green Jobs Employers

Logically, many other CTE industries could focus on sustainability, including: interior design, culinary services, health professions, hospitality and tourism, and automotive technology. The Heldrich brief also emphasized a pyramid of skills needed in the green economy which has been adapted in Virginia Beach to include sustainability.

Sustainability as a Core CTE 21st Century Skill: Local Application

In the late 1990s, Virginia identified 13 Workplace Readiness Skills that are embedded in all CTE programs. These skills are currently taught in all CTE classrooms statewide based on a curriculum written by VBCPS staff. Students are tested on their attainment of each skill using

a third-party assessment ("21st Century Skills for Workplace Success") through the National Occupational Competency Testing Institute (NOCTI). VBCPS is now moving toward the inclusion of sustainability as the 14th skill. Students will be taught the skill and tested on it in the NOCTI assessment. This fits the mission of Virginia Beach TCE: Provide students with standards and skills necessary to succeed in a world-class economy. In fact, the sustainability curriculum correlation to all technology, marketing, family and consumer science, business, trade and industrial, health, and agriculture education programs is readily apparent.

For example, the interdisciplinary Junior Achievement/Wired grant project between two local high school

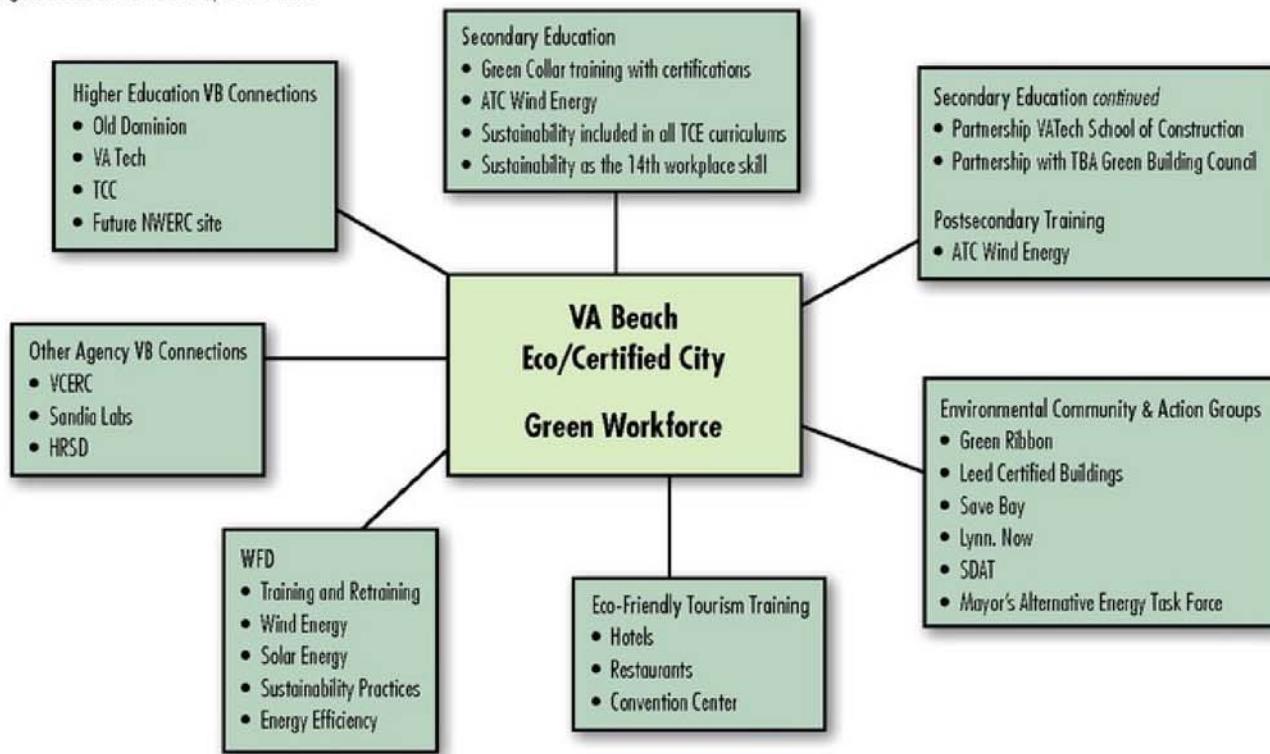
programs—modeling and simulation, and marketing—is a ready model of how sustainability fits into TCE. Students from the two programs saw the need to think green. As a result they developed a project that highlighted the value of solar umbrellas for the hotel community in Virginia Beach's resort area. (The marketing/modeling simulation project video can be seen at www.vbschools.com/TCE/index.asp.)

Partnerships are a requirement for successful CTE sustainability implementation. The partnership that exists between the City of Virginia Beach and the school system's CTE program is a perfect example. The chairman of the TCE general advisory council is the city's economic development coordinator for workforce development, and in turn, the director of TCE sits on the city's economic vitality strategic issue team—a team of individuals focused on furthering the city's economic vitality. Thus, the sustainability initiative in TCE works in conjunction with the city's workforce development efforts to make Virginia Beach an eco-friendly destination. This is evident in the city's Economic Vitality Strategic Issue Team Goal 7:

"The City of Virginia Beach is a green leader in terms of attraction of new firms. We actively continue our leadership role in environmental sustainability and green initiatives by promoting the best practices in energy and environmental design, model projects and procedures, education and incentives in our economic development projects."

"Long-term sustainability has and will continue to be a focus for the City of Virginia Beach," said City Manager James K. Spore. "We consider the alternative energy industry the next economic engine for the region—an industry that will not only help us protect the environment, but also create jobs and spur research

Figure 2: Virginia Beach Economic Vitality Goal 7 chart



and development. The city is forming partnerships with the Virginia Beach TCE program, as well as higher education institutions to train our workforce so it has the necessary skills for this emerging industry."

Trend data for VBCPS' "21st Century Skills for Workplace Success" test results indicate that more than 2,000 annual CTE graduates, with a pass rate of 79 percent, are more than ready to accept the sustainability challenge. As with the original Virginia 13 Workplace Readiness Skills, VBCPS is ready to create and implement the new sustainability curriculum.

With this priority in mind, Virginia Beach TCE recently developed a partnership with the Virginia Tech Myers Lawson School of Construction to work with the training guide, "Your Role in the Environment." The guide, written by Annie Pearce in conjunction with the National Center for Construction Education and Research, will serve as a foun-

dational document in the sustainability teaching effort in Virginia Beach. Pearce states that "sustainability is an essential skill that should be integrated into education from K-12 through university and all levels in between." Additionally, the partnership will involve video teleconference training and case study analysis between Virginia Tech faculty and Virginia Beach TCE faculty and students.

TCE leaders have also developed a unit on sustainability based on the "Understanding by Design" (UbD) curriculum framework. Jay McTighe, co-author of "Understanding by Design," reviewed the unit and observed that "the Virginia Beach TCE Program, already a leader in the use of real-world performance assessments, continues to push the envelope with its sustainability focus. This effort combines education for socially responsible actions with vibrant career opportunities." As a result of teaching this UbD unit, we anticipate that students will be able to:

- act systemically within an economic, social and environmental context;
- think critically to solve problems creatively and to apply environmental ethics to new economic and societal situations;
- assess the impact of human actions and to analyze the long-term consequences of unsustainable decisions within their chosen career path; and
- explore future employment opportunities offered by the green environmental movement.

What Can CTE Programs Do?

There are many additional green actions that CTE programs can take:

1. Ask CTE student organizations to organize service projects related to the greening of the community.
2. Include competencies related to sustainability in the curricula.
3. Include sustainability as a CTE "continuous improvement"

program indicator.

4. Provide training for teachers related to the green collar economy.
5. Partner with local government and the community to become green advocates.
6. Research green grants that may be applicable to CTE programs.
7. Partner with local colleges and universities in their campus sustainability efforts.

In June 2009, Virginia Governor Timothy Kaine made an Energy Conservation declaration. It highlighted the need to incorporate sustainability into the governor's CTE Exemplary Standards process. It also helped the commonwealth's career education foundation president, the individual who is responsible for implementation of the governor's CTE Exemplary Standards process, move forward with including sustainability in the 2010 standards. Several examples of comprehensive green city efforts (with CTE implications) that are under way or on the horizon in Virginia are already in the Virginia Beach Economic Vitality Goal 7 chart.

Efforts Under Way

Public city and private sector partners are looking into the future establishment of a 500-megawatt wind energy farm 12 miles off the Virginia Beach coastline. While this project is in the preliminary stages, it is driving community, environmental and economic dialogue on sustainability (not only in the city but also throughout the region). A proposed Virginia Beach-U.S. Department of Energy grant calls for the development of a wind energy demonstration project for training and certification at the K-14 level.

This project will take place at the city's Advanced Technology Center, which is itself a partnership between the public schools, city economic development, and the local community college. The VBCPS will also embrace green ideologies in the curricula for its new LEED-certified

alternative school, the Renaissance Academy, scheduled to open in January 2010. The Academy will feature a transdisciplinary instructional focus with quarterly themes like the one listed below.

Interacting with My World (Systems, Conservation and Stewardship)

- How do individual actions affect others and the environment within one's community and globally?
- What input choices could you make today that would ensure a more sustainable community tomorrow?
- What are the effects of progress on society and the environment?

CTE and Sustainability

That sustainability is the new workplace skill is undeniable. As such, CTE's role will be to develop new academic ap-

proaches to sustainability and continue to explore alternative curriculum paradigms and career pathway applications. Sustainability skills will help us understand and support the transitions toward a green economy. Our challenge is to put into practice what we already know to be true. ■

Patrick Konopnicki served as a panelist for a STEM, Career and Technical Education, Community College Caucus event on Capitol Hill on September 16. At "The Role of STEM Education in the Growing 'Green Collar' Economy" event he linked CTE and STEM, gave examples of how CTE provides industry certifications, and highlighted student competitions in physics/engineering and robotics.



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